

MSM

Methyl-Sulfonyl-Methane A Rich Source of Organic Sulfur



- Supplies bioavailable sulfur, an important mineral with antioxidant functions
- Supports the production of glycosamino-glycans/mucopolysaccharides, the precursors of collagen, cartilage and other connective tissues
- Enhances the synthesis of chondroitin sulfates, dermatan sulfate and hyaluronic acid
- Provides nutrition for the joints, synovial fluid, tendons, bones, skin and hair
- Helps to maintain the health of the cells of the intestinal lining and aids in the production of bile

Normally, the lining mucosal cells of the digestive tract have an especially high turnover rate such that the whole layer of surface cells may be renewed in 3-4 days. An inability to manufacture adequate building blocks (in this case, glucosamine "amino-sugars") will cause the intestinal wall to "thin" and allow toxins and not fully digested proteins into the bloodstream. Studies with MSM given to animals in their drinking water indicated that microorganisms in the gut lining may be responsible for incorporating sulfur from MSM into sulfur-bearing amino acids, with a positive benefit to this essential aspect of the metabolism. MSM may thus play a role in improving this aspect of gut health. Physiologically, organic sulfur is well-established as a precursor to the biosynthesis of the amino acid taurine, an important element in the production of bile.

Experimental findings show that MSM may reduce the impact upon the health of the intestinal tissues of various toxins. Similar protective benefits have been found with other tissues as well. Such results may represent a generalized nutritional support for certain classes of endothelial cells, or it may be the case that the immune-modulating effects of MSM are partially due to the free radical scavenging actions of organic sulfur. Further research is needed in this area to clarify the protective mechanisms involved.



Usage

Take 1 to 3 tablets, capsules or 1/4 teaspoonful one to three times per day, or as directed by your qualified health consultant.

Superior Nutrition and FormulationSM by
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One of the more curious findings with MSM is that some types of immune responses are positively modulated. The reasons for this are not at all clear. However, one route of protection may be support for gastrointestinal health. As an example, rheumatoid arthritis, which is an autoimmune disease, is strongly associated with the passage of toxins and certain proteins through the wall of the gut and into the blood. This is sometimes referred to as "leaky gut" syndrome. Interestingly, MSM is said to improve allergies, constipation, and even problems with parasites.

Common to all of these are problems in the health of the intestinal wall. Animal studies provide evidence that supplementation with MSM supports improved health of the intestinal tract.

The Gut-Immune Connection

This can lead to brittle or soft nails and can be an indication of either inadequate sulfur in the diet or a poor ability to manipulate dietary sulfur to match the body's needs. Interestingly, when sulfur was given to one hundred arthritis patients intravenously in one trial, many found that the pain and other symptoms of their arthritis disappeared and that their fingernails returned to normal in the nail test for cystine.

Under conditions of greatly increased demand, even relatively abundant minerals can be in short supply to critical repair functions in the body. Osteoarthritis is a condition which increases demands upon all those elements which are necessary for the synthesis of cartilage. It might, therefore, be expected that supplementing sulfur would enhance joint tissue repair. A recent study performed at UCLA found that MSM, indeed, is helpful in this regard.



Sulfur is well represented in the human organism because it is required for the repair of joint tissues and for the construction of connective tissues. MSM itself is abundant in our bodies. Some authors have estimated that upwards of 85% of the sulfur found in living organisms is provided by MSM and related compounds. For instance, the circulatory system of an adult human contains about 0.2 parts per million MSM.

Supplying Sulfur for Joint Repair

MSM is a stable, bioavailable source of sulfur which can be derived from plants grown either on land or in the sea. Marine sources include algae and phytoplankton. Hence, MSM can be derived from natural sources. Moreover, there is even a "sulfur cycle" in the biosphere in which sulfur is taken up from the soil by plants, is released into the atmosphere as the highly volatile dimethyl sulfide, then is oxidized in the upper atmosphere to dimethyl sulfonoxide (DMSO), which then becomes the atmospheric source of MSM. DMSO and MSM return to the soil via the rain, and then the sulfur cycle repeats itself. Plants in their fresh state thus contain a quantity of MSM when grown on sulfur-rich soils, although most of the compound found in plant foods may be lost by improper handling and storage.

Whether MSM possesses significant antioxidant properties of its own has apparently not been studied directly. However, sulfur compounds typically serve this role in the body and help to transport methyl groups for various purposes. It may be the case that many of the effects of MSM are partially due to the free radical scavenging actions of sulfur.



MSM: Sulfur Source and Antioxidant

Current research continues to supply an increasing amount of scientific evidence that explains and confirms past anecdotal reports of the benefits of MSM. **Jarrow FORMULAS®** MSM provides the highest quality available of this versatile source of bioavailable sulfur.

Many of the benefits derived from onions, garlic and the cruciferous vegetables, may come from the sulfur which these supply. The sulfur-bearing amino acids methionine, cysteine and taurine are very important in maintaining normal metabolism and in supplying the building blocks for the production and repair of the skin, cartilage, ligaments and tendons.

An Extraordinarily Versatile Nutrient

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